

Roller guide for sliding motor vehicle door

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Abstract of DE19723837

The roller guide has a housing with two fixed rails, whereby one rail forms a support on the inside along the width of the door opening, and the other rail acts as an outer guide rail parallel to the support rail. The roller guide has an extension arm (12) with a swivel plane running at right angles to the door plane, and is divided into successive arm parts (10,1). The arm parts swivel in the swivel plane relative to each other between an extended position when the door is opened, and a folded position when the door is closed. The arm (11) on the door side is rigidly connected (13,14) to the door. The rails can run at different levels covering one another in the cross-over area, and guide rollers (7,8,9), which individually run along the rails, engage on the rail-side arm part (10).

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The invention relates to a roller apron in accordance with the preamble of the claim 1.

At roller aprons for sliding doors, which, as with box cars in the automobile engineering conventional, to open first from a body-lateral door opening issued or excavated to become to have, before it consists the need in longitudinal direction displaced to become to be able, accordingly to force as it were a composed door movement by corresponding formation of the roller apron.

This happens, sees also the genericformed DE 31 19 730 A1, in the long run by means of an issuing arm pivotable in an horizontal plane by guide rollers, which is pivotable hinged with the state of the art at its free end at the door. While in the construction after the cited Patent Laid open as guide bodies serving guide rollers run in an additional guide rail present to a support rail to the receptacle of support rollers, others see, likewise with an issuing arm working constructions for guidance and support rollers combined rails forwards (DE-AS 12 36 970, DE-PS 12 80 710, DE 32 47 990 C2).

In dependence of the respective door-strong (wall thickness) it can be required to give to the issuing lever a relative long length thereby the door by the issuing movement of the edge of the opening in the housing (body) free comes. In closed position of the door the housing of such a prolonged issuing arm can make however difficulties. Also this relative prolonged issuing arm over prolonged operating times must be in such a manner form-stable that it guarantees opening and closing movements of the door with sufficient accuracy.

The invention is the basis therefore the object, one would genericin accordance with-eat roller apron bottom keeping preserved construction principle to create, which avoids the difficulties mentioned by a relative prolonged issuing arm.

The solution according to invention of this object exists favourable formations of the invention in the characterizing features of the principal claim, describes the Unteransprüche.

In advantageous manner the invention maintains thus the principle of a pivotable issuing arm, whose movements are tuned by guide bodies (in particular guide rollers, but if necessary also wedges). The described drawbacks of a prolonged issuing arm become by embodiment the same as at least two successive partial arms exhibiting issuing arm avoided, whose partial arm takes an essentially stretched relative position only in the issued state of the sliding door, while they are as it were collapsed with closed door. Is by this folded up layer of the partial arms on the one hand assured that is relative short with closed door the issuing arm that it possesses on the other hand then in addition, a small block measure (vertical to the door-planar). In deviation of the state of the art the door side partial arm with the door is not pivotable, but rigidly connected. Thus the construction according to invention is thus particularly space-saving in the region of the issuing arm, without in any manner this construction principle including that relative easy adaptability suffers the beneficial properties over the special design of the two rails.

An embodiment of the invention for the case of a roller apron for a motor vehicle sliding door becomes in the following explained on the basis the drawing. Show:

Fig. 1 the ratios both with more issued and with closed sliding door,

Fig. 2 enlarged the isometric layer of the components of the roller apron with issued sliding door and

▲ top Fig. 3 likewise enlarged in plan view the layer of the different components with closed sliding door.

The essential body-fixed components of the roller apron are the rectilinear longitudinal support rail 1 and the guide rail 2, which run over its essential prolonged range parallel to the support rail 1 as outer rail, while it is in their the closed door associated end region 3 in such a manner curved that it over-crosses the guide rail 1 and then within the same (always related to the vehicle) runs. Like in particular Fig. to recognize the guide rail 2 leaves, runs 2 above the support rail 1. It has a downward open channel, while the profile of the support rail represents 1 an upward open U.

In the guide rail 1 the roller carriage 4 also in this embodiment two support rollers 5 and 6 as well as two guide rollers 7 and 8 supporting at the side walls of the support rail 1 runs itself. Further one recognizes the third guide roller 9 in the guide rail 2. It becomes supported of the partial arm 10 the other partial arm 11 exhibiting, general issuing arm for the not represented, there a known structure possessing door, designated with 12, at which the issuing arm is 12 with 13 and 14 screwed. The seem-lateral partial arm 10 stands, like particularly significant Fig. to recognize, not only the bottom influence of the respective position of the guide roller 9 and thus the course of the guide rail 2, but also the bottom influence of the respective position of the guide roller 8, which runs in the support roller 1, leave 2. The relative position of the two guide rollers 8 and 9 certain accordingly the respective swivelling position of the partial arm 11. With more opened, D. h. issued door are the two partial arms 10 and 11 in an essentially stretched relative position, so that the issuing arm 12 has its maximum possible length assumed. In contrast to this effected with the closing movement of the door the fact that those arrives to the guide roller 8 somewhat leading guide roller 9 then into the curved end region 3 of the guide rail 2, a swivelling of the partial arm 10 in Fig. 1 against finally into its with 10 ' designated closing situation, whereby the door side partial arm 11 of the issuing arm takes 12 its with 11 ' designated swivelling situation, in which it with the first mentioned partial arm 10 ' an essential smaller angle than before includes. One can say thus the fact that the two partial arms 10 ' and 11 ' are now collapsed and so that with closed door ' forms an issuing arm 12, which guarantees a relative small block measure of b now despite a relative large excavation A for the opened door.

In the described example a roller apron for the door area with flat intake curve (flat rail range 3), front in closing direction, is assumed. The invention is more insertable however also for the rear door area. At in each case different the door area a Zwangsführung must likewise be provided, for which a known construction or again the invention can become used.

With the invention is one would genericin accordance with-eat accordingly roller apron provided, those with actual preserved means a large issuing movement of the door to open the same possible, without large dimensions with closed door in purchase taken to become to have.

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1. Roller apron for to open issuable sliding door, in particular for motor vehicles, with two housing-fixed rails, from a door opening in an housing, from which as support rail for the door along the door-opening-wide essentially more linear as an interior rail and the other one than guide rail for the door than outer rail an essentially parallel runs to the support rail with exception the end of the door closing movement of an of associated end region, which is over-crossing the alignment of the support rail curved, as well as with scanning an issuing arm with a vertical longitudinal a swivelingplanar to the door-planar, which attacks in the region its rails of cleared away end at the door, over guide body the course of the guide rail, characterised in that the issuing arm (12) into successive partial arms (10, 11) divided is, in the swivelingplanar the relative to each other between a to a large extent stretched relative position with opened door and a to a large extent folded up layer (10', 11') with closed door pivotally connected is and of those the door side partial arm (11) rigid (with 13, 14) with the door connected is.
2. Roller apron according to claim 1, characterised in that the rails (1, 2) in different heights and within the crossover range covering get lost.
3. Roller apron according to claim 2, characterised in that at the seem-lateral partial arm (10) of the issuing arm (of 12) individual guide bodies current in both rails (1, 2) (7, 8, 9) engage.
4. Roller apron according to claim 3, characterised in that in the guide rail (2) current guide body (9) opposite in the support rail (1) current guide body (8) in door closing direction offset is.
5. Roller apron according to claim 3 or 4, characterised in that in the support rail (1) a carriage (4), equipped with carrying and guide bodies (5, 6, 7, 8), runs.
6. Roller apron after one of the claims 1 to 5, characterised in that the guide bodies guide rollers (7, 8, 9) are.

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